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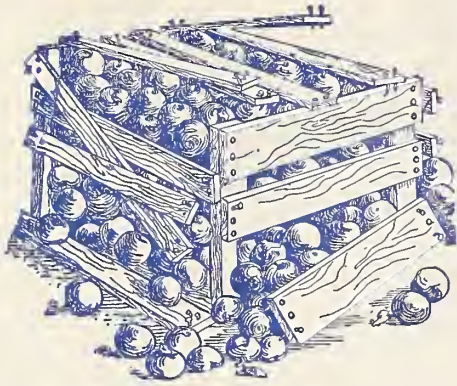


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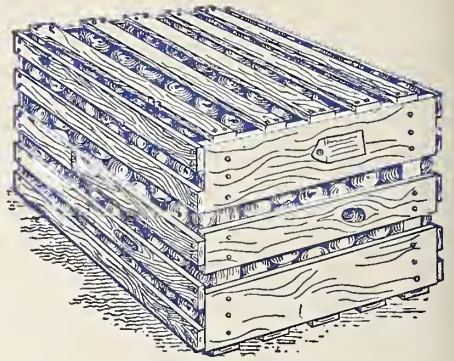
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I beg to advise the Associations, Shippers and Dealers of fresh, dried and canned fruits and vegetables, butter, eggs, poultry and produce generally that I have been appointed Northwest Representative of The Packer, in charge of correspondence, advertising and subscription business of the Northwest of this publication.

I trust that you will favor me with news matter concerning your association and business for publication in The Packer.

Kindly put my office on your general mailing list.

To make this office a success I trust you will favor me with your advertising and subscription business for The Packer, as I am sincerely anxious to make a success of my new venture. Yours respectfully,

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BETTER FRUIT

AN ILLUSTRATED MAGAZINE PUBLISHED MONTHLY IN THE INTEREST OF MODERN, PROGRESSIVE FRUIT GROWING AND MARKETING

Rovolving the Consumer's Dollar Backwards or the Elements that Enter Into the Consumer's Orange Price.

By G. Harold Powell, General Manager California Fruit Growers Exchange, Los Angeles, California, Delivered before the Twelfth Annual Meeting of the Western Fruit Jobbers Association of America, Memphis, Tennessee, January 16-19, 1916.

THE American consumer pays annually from \$75,000,000 to \$85,000,000 for the California citrus fruit crop of 20,000,000 boxes. The retail cost of distributing the fruit to the consumers varies from \$25,000,000 to \$30,000,000, including the net profit of the retailer. The jobber's cost of distributing the fruit to the retailer, including his net profit, varies from \$6,000,000 to \$8,000,000. The railroads receive approximately \$17,000,000 to transport the fruit from California. The cost of selling by the producers to the jobbers on a non-profit, co-operative basis is approximately \$1,000,000; the cost of national advertising is \$350,000. This leaves a return to California of \$30,000,000, out of which the grower must pay the cost of production and of preparing the fruit for shipment.

Revolving the Consumer's Dollar Backwards

Stating the problem differently: When the consumer buys a dollar's worth of citrus fruits this dollar splits up approximately into the following elements when revolved backwards to the producer:

The retailers' gross margin, 27% to 35% of the consumer's dollar;

The jobber's gross margin, 8% to 8½% of the consumer's dollar;

The railroad's gross earnings, 20% to 23% of the consumer's dollar;

The non-profit, co-operative distribution from producer to jobber, 1% to 1½% of the consumer's dollar;

National advertising, .5% of the consumer's dollar.

The crop brings to California from 35% to 40% of the consumer's dollar, of which the fruit on the tree gets 25% to 27% or more.

Operating Costs and Profits

The operating costs of the retailer, the jobber, the railroads and the producer are largely fixed. They are independent of the value of the fruit. They represent the cost of producing the fruit; of railroad and refrigeration service; of delivery by the retailer and jobber; the jobber's selling cost to nearby retailers; the jobber's cost of developing trade with the countless retailers in the small outlying towns and country places; and the cost of rent, management, buying, credit losses and expenses, heat, light, telephone, taxes, interest and other miscellaneous expenses, including losses from decay and stealing.

Whether the jobber or retailer makes a net profit depends on the buying and selling price, the cost of doing business, the volume and the number of capital turn-overs.

The railroad's gross earnings are always the same, as the rate per hundred pounds is fixed.

Whether the producer makes a profit depends on the quality of his fruit, the yield of his grove, the amount expended in production, including the management of his place, the efficiency

bulk of the crop, either direct or at auction, to 2,500 to 3,000 carlot jobbers in the principal cities of the United States and Canada.

The jobbers assemble and distribute the fruit, either direct or through 7,500 traveling salesmen, to 300,000 retail dealers, including grocery stores, chain and department stores, popular stores, general merchandising stores, drug stores, restaurants, hotels, fruit stores, push carts, wagons, stands and other miscellaneous avenues of distribution. The jobber is a banker for the retailer in addition to the functions outlined above.

The retailers distribute the fruit to 100,000,000 people, one-half of whom live in villages of 2,500 or less, and on the farm.

The consumer buys the fruit over the counter, by telephone, through order takers, from the push carts, street stands and in other ways, the great bulk of the fruit passing through the grocery stores or other stores from which he gets his daily food supplies.

This machinery represents the simplest form of distributing an American agricultural crop. In most industries, the producers are not organized. The crop is distributed largely through unorganized local buyers, by representatives of jobbers, by brokers or others who make a profit on the distribution to the jobbers or wholesale dealers, thereby imposing an unnecessary expense of two, three and even ten times as much as the systematic distribution of the organized producer, and at the same time giving only an inadequate distribution.

Are the Jobbers and Retailers Necessary?

One cannot contemplate the vast machinery that bridges the span between the producer on the one hand and one hundred million consumers on the other, without asking the question, "Is every link in the chain necessary to serve the interests of both the producer and consumer, and, if so, are their interests efficiently and economically served?" The answer is being sought in every part of America at the present time through investigations by producers and consumers, by various kinds of organizations and by the state and federal governments. If the jobber and retailer are performing a vital service in bridging the gap and are doing it efficiently and economically, then each has an economic justification



G. HAROLD POWELL
General Manager California Fruit Growers
Exchange, Los Angeles, California

of his general management, and the selling price. It costs the grower an average of \$1.29 to produce, harvest, pack and place a box of oranges on the cars in California. It costs the lemon grower an average of \$1.90 per box. It may be interesting to note that the elements that enter into the cost of producing oranges and placing them in the hands of the jobber generally divide approximately as follows: Labor, 14.8%; materials, 23.3%; harvesting, 4.6%; packing, 14.3%; freight and refrigeration, 40.0%, and selling, 3.0%.

The Machinery Which Distributes the California Citrus Fruit Crop

The machinery which carries the citrus fruit crop from the producer to the consumer begins with 14,000 California growers, who, through their own agencies, distribute and sell the

and each will continue as part of the distributing system as long as he continues to perform the service in this way. Wherever a better link can be forged then a part of the present chain will drop out, whether it relates to a service performed by the producer, the jobber or by the retailer.

A Study in Distribution by the Citrus Fruit Industry

The California citrus industry has been studying its own distributing problem, because the production of oranges and lemons is increasing much more rapidly than the population. The Valencia shipments, which now equal 12,000 carloads, will double in a few years. The lemon shipments of 8,500 carloads will more than double in the near future and California will supply more lemons than the present total consumption of Canada and the United States, including imports. There are more than 40,000 acres of Washington navel oranges four years old or under, which will soon come into bearing, and will materially increase the navel shipments. The problem of the California citrus industry is first to develop a product of quality, then to create a larger consumer demand, and finally to adjust its distributing operations to the jobber and the retailer so that the supply may be uniform and the consumer demand can be efficiently filled and promoted by the producer, the jobber and the retailer working together. Looked at from its broadest aspect, the problems of the producer, the jobber and the retailer are intimately connected, and are all of the same character—a problem of efficient, economical distribution to fill a larger demand which must be developed on the part of the consumer. There can be no fundamental antagonism between the citrus fruit producer, the jobber and retailer if they understand each other's problems.

The Details of the Investigation

The investigation of the cost of distributing the citrus fruit crop has extended over two years in the principal cities of the United States and Canada. It has been made through the co-operation of the jobbers and retailers, with agents of the industry located in these places. Recently the investigation has been extended to the rural districts, where one-half of the population resides. The method of the investigation follows: Beginning in January, 1914, the agents, starting with the delivered price to the jobbers of oranges varying in size from 80s to 360s, and lemons varying from 270s to 420s, of all grades, determined the price which the leading jobbers in each place charged the retailers for these sizes and grades, and

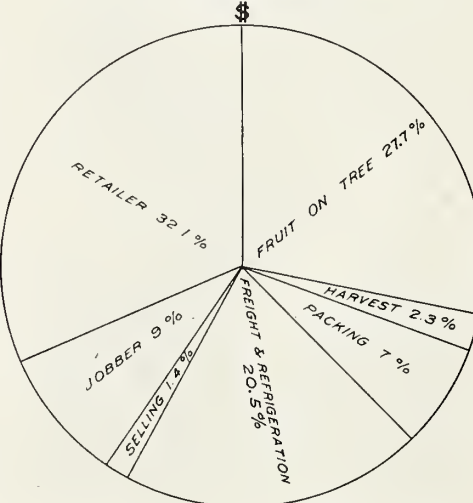
then determined the price which the retailer charged the consumer. The data have been accumulated on all sizes and grades for two years, and 12,000 price reports have been brought together in this way. Supplemental to this general investigation a large amount of information has been furnished by jobbers and retailers who have given the records of their distributing costs from their books.

In this report, representative periods in 1914 and 1915 are selected to show the factors that enter into the consumer's price when a dollar's worth of oranges are purchased from the retail dealer.

The Consumer's Dollar, 1914

From April 15, 1914, to December 1, 1914, twenty-eight representative cities are selected, including 3,265 jobbing and retail prices. This period covered low prices on both Navels and Valencias. The average price paid by the consumer was approximately 37½ cents per dozen for all sizes of the grades included in the reports. The factors entering into the consumer's dollar under these conditions are shown in the chart and table following:

The Consumer's Dollar, Oranges, April 15 to December 1, 1914



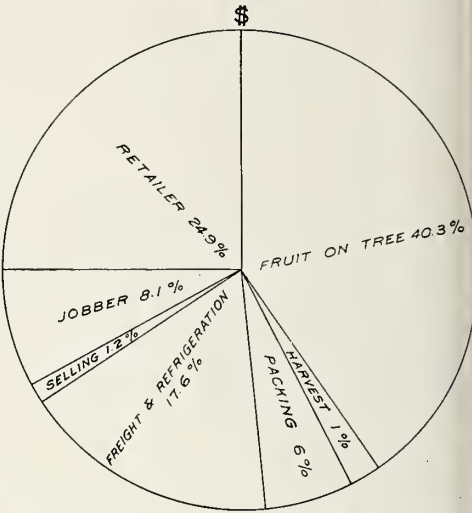
	Per Box	
Fruit on tree.....	\$1.2896	27.7%
Harvesting .....	.1058	2.3%
Packing .....	.3246	7.0%
Selling .....	.0660	1.4%
F.O.B. California	\$1.786	38.4%
Freight and refrigeration....	.954	20.5%
Delivered price	\$2.74	58.9%
Jobber's margin (gross).....	.42	9.0%
Jobber's price	\$3.16	67.9%
Retailer's margin (gross)....	1.49	32.1%
Consumer pays	\$4.65	100.0%

The Consumer's Dollar, Oranges, 1915

The period from April 15, 1915, to December 1, 1915, includes 34 cities and 4,138 jobbing and retail prices. This period represents a higher price for the fruit of both Navels and Valencias, the consumer paying an average of 43½ cents per dozen for the oranges of the grades included.

The factors entering into the consumer's dollar under these conditions are shown in the chart and table following:

The Consumer's Dollar, Oranges, April 15 to December 1, 1915



	Per Box	
Fruit on tree	\$2.1896	40.3%
Harvesting .....	.1058	1.9%
Packing .....	.3246	6.0%
Selling .....	.0660	1.2%
F.O.B. California	\$2.686	
Freight and refrigeration....	.954	17.6%
Delivered price	\$3.64	
Jobber's margin .....	.44	8.1%
Jobber's price	\$4.08	
Retailer's margin	1.35	24.9%
Consumer pays	\$5.43	

The Retail Distributing Cost

The retail distribution of the citrus fruit crop to 100,000,000 consumers is naturally the most costly, because it represents a service to a vast number of unorganized people, performed by a vast number of factors, the smaller of which are almost equally unorganized. It has been shown by Mr. C. C. Parlin, Chief of the Research Laboratory of the Curtis Publishing Company, that the average cost of doing the retail food business of the United States is 17% on the selling price, while the average net profit is 3%, making a gross cost of 20%. The figures developed in the retail citrus investigation show a gross profit of 32.1% on the low selling price in 1914, and 24.9% on the higher selling price in 1915.

The cost of handling a perishable fruit that is subject to decay and deterioration, is naturally higher than the cost of handling semi-perishable and non-perishable food products. The excess cost which is inflicted on the retailer from decay depends primarily on the care with which the fruit is handled by the grower in preparing it for shipment and on the rapidity of his stock turn-overs. It is well known that the fruit business, along with many other products, returns a relatively high profit to the retail dealers because half or more of the value of the goods sold through the store, including sugar, flour, sometimes butter and other articles, are often handled without profit and sometimes below the cost of handling. This condition inflicts on the consumer a somewhat higher price on fruits and vegetables because the retailer's net profit must be made on one-half the goods passing through his store.

A Manager Wanted

I require a manager for my 100-acre orchard (3 years old), within 15 miles of the city of Melbourne, Australia, population 600,000. (Good roads.) I need a competent man to take full charge as I am in business in the city. Therefore, any applicant must have a thorough knowledge of the fruit industry and give excellent references. Address S. Stott, "Viewbank," Burke Road, East Malvern, Victoria, Australia.

Number of Stock Turn-overs

The thing that is of primary interest to the producer and the jobber is whether the retail dealer turns his stock over in the quickest possible time and thereby gives the maximum distribution of fresh fruit to the consumer and at the same time reduces decay and waste to a minimum. With the fruit stores, popular stores, stands and better grocery stores, there is little question but that every art known to the merchant is used to promote quick sales because the progressive merchant knows that his net profit at the end of the year depends on the number of turn-overs he gives his capital.

But with the country merchant and the small retailer who carries a box or two under the counter or in an inconspicuous place in the store, the answer is not so clear. Here is an opportunity for continuous and sympathetic co-operation between the producer, the jobber and his traveling salesmen in developing the best retail fruit displays, the best retail merchandising methods which will attract the consumer, in helping the retailer strengthen his strategic position of personal contact with the consumer and thereby giving wider and quicker distribution. One-half of the consumers of the country are served by the small town and country merchants. Oranges and lemons are self-sellers if artistically displayed. We know that many jobbers co-operate with the retailer and conduct an educational campaign among them. One leader among the retail merchants of a community is a powerful example in good merchandising methods. Whatever he does, the others are likely to do. Here is an opportunity that the jobber can promote through his salesmen by developing a

frank co-operation with the retail merchant, and in developing pacemakers among the retailers. It is an almost undeveloped field in the average small town or country district. Dealer service aids in the form of artistic window displays, which make the consumer a friend of the store and create a desire for the fruit, mass displays of citrus fruits with other fruits and vegetables, which should be the central feature of the grocery store because of the profit to the dealer, and local advertising as supplemental to national advertising—these are the lines of effort that are most likely to show returns in the smaller towns and country districts. They are the lines that give the maximum distribution—an increased outlet for the producer, a larger business for the jobber and a profit to the retailer.

The Jobber's Cost of Doing Business

The average jobber's gross profit for distributing citrus fruits to the retail dealer is not above the average jobbing cost of distributing food products as a whole. It has been shown by Mr. Parlin, from extensive data secured from all parts of the United States, that the local food jobbers doing a business of \$500,000 or under, usually have a cost of 5½% to 6½%, while those doing a business of \$500,000 to \$1,500,000 have costs of 7% to 8%, while the sectional jobber whose volume of business varies from \$2,000,000 to \$8,000,000 usually has a cost of 8% to 9%.

From the data which the citrus industry has secured it is evident that the average fruit jobber averages a gross profit of 10% to 13% on the selling price, including decay losses. This is probably not far from the gross margin of the average food jobber.

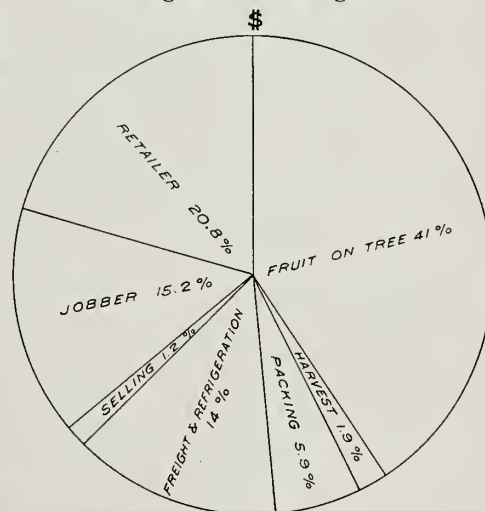
The average fruit jobber is performing a vital economic service as a banker, an assembler and distributor of fruit. What is needed is less radical discussion of the jobber and a better mutual understanding of the problems of the producer, the jobber and the retailer, to the end of a better working relationship in solving the big problem that affects all, i. e., the wider distribution of the rapidly-increasing fruit crop.

Abnormal Gross Margins

The jobber problem, however, is not without its less favorable aspects in some districts where competition does not have full play. Here the jobbers often try to lessen competition by gentlemen's agreements or other forms of understanding. They impose a high gross profit on every box of citrus fruits sold in the city and occasionally in the country districts. These arrangements may not adversely affect the price which the grower receives, but an analysis of the record shows that the high margins restrict consumption, the merchant making his profit on a few turn-overs at a high net profit on each, rather than a larger number of turn-overs with a low net profit on each. This system of merchandising restricts distribution and is therefore detrimental to the citrus industry.

The chart and table following show the elements that enter into the consumer's dollar in a district where the jobbers depend on high margins and a few turn-overs in the sale of oranges:

The Consumer's Dollar Showing a High Jobber Margin



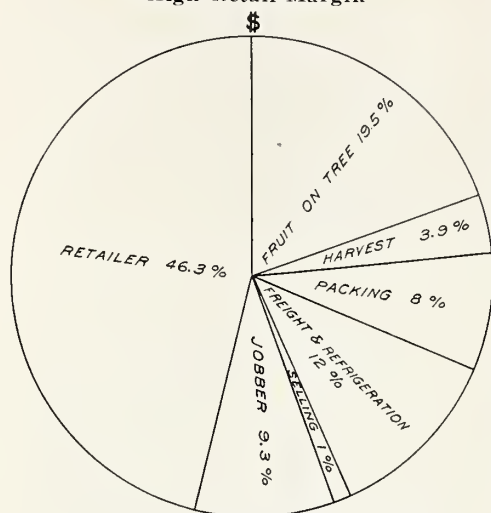
	Per Box	
Fruit on tree	\$2.2636	41.0%
Harvesting .....	.1058	1.9%
Packing .....	.3246	5.9%
Selling .....	.0660	1.2%
F.O.B. California	\$2.76	50.0%
Freight and refrigeration....	.77	14.0%
Delivered price	\$3.53	64.0%
Jobber's margin .....	.84	15.2%
Jobber's price	\$4.37	79.2%
Retailer's margin	1.15	20.8%
Consumer pays	\$5.52	100.0%

The chart and table following show the elements that enter into the consumer's dollar in a district where the retailer depends on high margins and few turn-overs in the sale of lemons:



The picture shows the new Hudson Super-Six. This is the car with the patented motor, which is vibratorless. The Super-Six, on the Sheephead Bay Speedway, last November, created new stock car records for speed, durability and acceleration, under American Automobile Association supervision. The Super-Six is by far the handsomest, roomiest and most luxurious car yet produced by the Hudson factory. The demand for the Super-Six is the greatest in the history of the Hudson factory. The plant has been doubled to produce 30,000 Super-Sixes this year.

The Consumer's Dollar Showing a High Retail Margin



	Per Box	
Fruit on tree	\$1.454	19.5%
Harvesting .....	.292	3.9%
Packing .....	.596	8.0%
Selling .....	.077	1.0%
F.O.B. California	\$2.419	32.4%
Freight and refrigeration....	.891	12.0%
Delivered price	\$3.31	44.4%
Jobber's margin .....	.69	9.3%
Jobber's price	\$4.00	53.7%
Retailer's margin	\$4.45	46.3%
Consumer pays	\$7.45	100.0%

per cent. In the West, the Northwest, in Canada and in the Southern States, where distances covered by a jobber are great, all expenses—rents, wages, telephone and telegraphic costs, traveling salesmen, delivery and other expenses incidental to the development of a small town and country trade—make the operating cost often twice as large as in the more densely populated Eastern States.

Fluctuations in the Shipper's, Jobber's and Retailer's Prices

There is a widespread popular impression that the retail price of citrus fruits remains the same throughout the year, irrespective of the price which the retailer pays for the fruit. There is a less widespread impression that the jobber charges the retailer about the same per box irrespective of what he pays the producer for the fruit.

We have charted the producer's price, the jobber's price and the retailer's price on identical sizes and grades of oranges for two years. These figures cover thirty-four principal markets. They do not include the small towns and country trade. The fluctuations in these prices are shown in the following diagram:

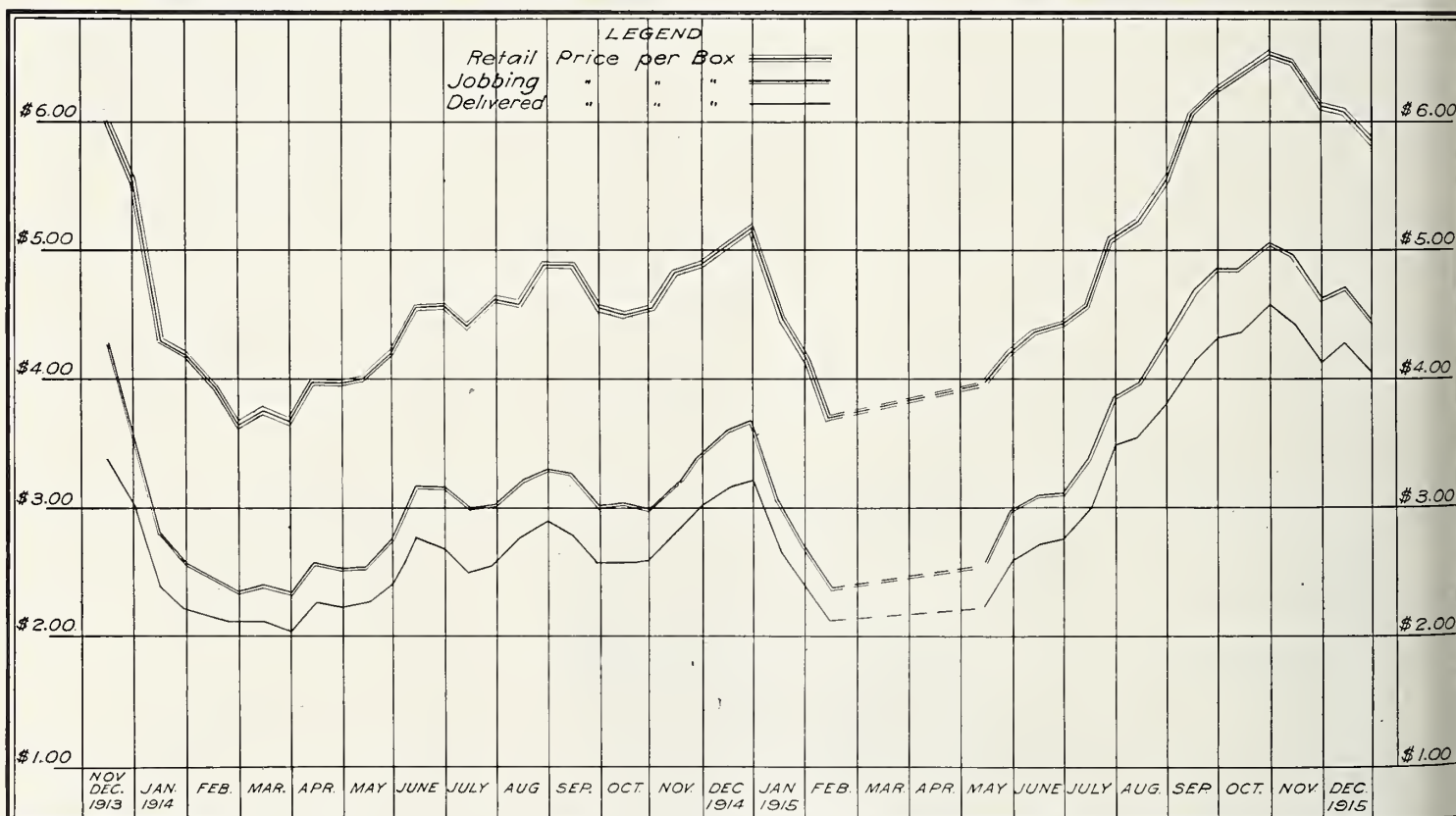
rule applies with equal force to the retail trade.

Prices May Apparently Be Uniform

There is a condition in the citrus fruit business that makes uniform prices to the retailers and consumers sometimes apparent. That is the variety of grades and sizes with which the jobber or retailer may supply his customer's wants. The orange retailer, for example, may charge a uniform price of 40 cents per dozen for weeks at a time, but he has varied the grades and sizes to fit the uniform retail price. The jobber has also the same opportunity in filling the retail orders. A price investigation which is not made on identical sizes and grades is misleading and worthless for economic conclusions.

Lemon Prices Fluctuate Less Than Oranges

While the jobber's and retailer's prices on oranges follow the delivered price with close regularity, the same condition is not always true of lemon prices. The reason is that the lemon is largely a speculative product rather than a staple product like the orange. The principal use of the lemon is in cold drinks in the summer time. The fruit can be safely stored for weeks



Costs East and West

The investigation shows a wide variation in the costs of doing business in different parts of the country. In the densely populated sections east of the Mississippi, operating costs are comparatively low. Rents are lower, interest rates, wages, the expense of traveling salesmen and other expenses are lower, sometimes by two or three

From this chart it will be seen that the three prices follow each other with almost mathematical exactness. Competition among the jobbers and among retailers brings this about. The jobber is keen for trade, and when the buying price rises or falls he is forced through competition to fluctuate his selling price to correspond. If he does not do this, his more aggressive competitor takes the business from him. The same

and the jobber and retailer sell the lemon at relatively higher margins. With the development of more general uses of lemons through national advertising, such as culinary uses, health and toilet uses, the lemon will be made a more staple product. The speculative element will grow less important, the merchant will obtain his supplies as needed, and the jobbing and retail prices will follow the delivered price

with greater regularity. Now the speculative handling of the lemon is a distinct drawback to its widest distribution.

General Considerations

We have touched only the high spots in the investigation of the cost of distributing the citrus fruit crop. The California citrus industry is vitally interested in the problems of the jobber and the retailer. The industry realizes the economic necessity of each in the distribution of its product to the American consumer. The industry can thrive only when the consumer demand keeps pace with the increase in production. The jobber and retailer can thrive only when there is an active consumer demand. The problem of the industry, therefore, is to produce oranges and lemons of good quality, because no food industry can permanently prosper except on a basis of quality. The second problem lies in co-operating with the jobber, the retailer and with every effective factor of publicity in creating an increasing consumer demand. The third lies in developing the most effective merchandising methods whereby the consumer demand may be quickly filled and stimulated. The jobber and retailer must of necessity be vitally interested in the same problems, because they thrive only when the consumer is an active buyer and when the producer has a high-grade product to sell. No more than the producer can the jobber or retailer live unless he makes a fair profit, nor can he develop the best kind of merchandising unless his profits are commensurate with his efforts.

The industry is interested with the jobber and retailer in the most perfect system of distribution that can be devised so that the entire crop can be handled on an orderly merchandising basis from the producer to the consumer. At the present time there is a lack of systematic distribution because producers as a whole are inadequately organized.

Whenever prices are low and the investment of the producer is jeopardized, then the ghost of the jobber and other distributing agencies stalks the earth. The ignorant man and the demagogue alike then demand that the American system of distribution be revolutionized; that somebody be eliminated; that the products of the soil be distributed more directly and economically to the consumer. That the system of handling farm products is wasteful and costly no student of distribution can overlook. The farmer is unorganized, except in industries like the California citrus industry. His products are not standardized. The distribution, unless organized, is speculative and chaotic. The jobbers are often unorganized; the retail trade as a whole is as little organized as the average agricultural industry.

Through organizations like the National League of Commission Merchants, the Western Fruit Jobbers' Association of America, the National Wholesale Grocers' Association, the

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National Retail Grocers' Association and state and local organizations, there should gradually develop a better mutual understanding of the questions of the producer, the jobber, the retailer and the consumer, and a more effective co-operation in solving their common problems. The American consumer holds the key that unlocks each of

these problems. It is our purpose to define the citrus problem as clearly as we see it and to co-operate with the jobber and retailer in the development of the most efficient merchandising methods in giving the widest possible distribution to oranges and lemons in response to an increasing consumer demand.

Developing the By-Products Industry

By Paul H. Weyrauch, Walla Walla, Washington

THE development of the by-products industry in this great Northwest is still in its infancy, and yearly enormous quantities of various fruits and vegetables are going to waste. How to prevent, or take care of this waste, is the question of the hour, and the problem is one that is deserving of the greatest consideration by all those interested in the future of the Northwest. The conversion of this waste or raw material into any one of the finished by-products, such as canned fruits, vegetables, dried fruits, jams, jellies, preserves or syrups, requires considerable technical knowledge and a great deal of practical experience. There are in the Northwest few men who possess the technical knowledge required, and who have also had the practical experience which is indispensable. This is one of the reasons why so many of our canning and other by-products plants have failed to make good. Another and even more important reason for these failures is the lack of cooperation. Owing to the lack of cooperation there has been in many instances a duplication of plants of a similar nature within a limited territory. This is particularly true as far as vinegar factories are concerned. The consumption of sweet cider and of vinegar is naturally limited, and owing to its bulky nature vinegar can only be shipped comparatively short distances, yet we have more vinegar and cider plants in proportion than we have evaporators and canneries.

The solution of this problem is cooperation by the growers within each fruit-growing district in the Northwest, and in turn cooperation by all the dis-

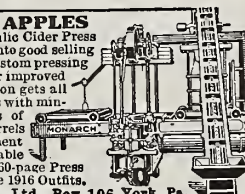
tricts comprising the Northwest. This cooperation once established will make it possible to care for the greater portion of the raw material now going to waste. It will be possible under such cooperation to secure for this territory the services of the very best processors or cannery men, experts on jams, jellies, preserves and syrups, and experts in the drying or evaporating of fruits. With such experts working under the direction of a central board, it would soon be possible to recommend to each district a line of procedure according to its needs, as well as one that would meet all the conditions of the entire Northwest.

By close cooperation within each district it would be comparatively easy to raise sufficient capital to put up the proper kind of a plant, be it cannery, evaporator or vinegar plant. Since expert advice would always be available, the mistakes made in the erection of these plants in the past would be easily avoided. It would also be impossible for a promoter to foist upon an unsuspecting public an impractical lot of machinery, as has been done in so many instances in the past. There are, of course, in the Northwest a number of successful by-products plants that are

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owned by private capital or stock corporations. An effort should be made to have these successful plants join in this cooperative movement. Wherever this can be accomplished a possible competitor will be eliminated and the technical knowledge and practical experience of the successful operator will be at the disposal of the cooperative organization. I have used the term "successful" advisedly, since an unsuccessful operator can neither be of benefit nor can he be a hindrance to the cooperative movement, while the "successful" operator may be either. For this reason, this movement should make every legitimate endeavor to enlist the interest and cooperation of the owner of existing successful by-products plants.

Under this cooperative plan it will also be possible to adopt certain standards in the various byproducts that it will be found practicable to manufacture. This standardization will greatly facilitate the marketing of the output of these plants. The marketing should all be done by a central organization, which organization successful independent plants should also be invited to join. After a close study of this subject covering a long period, I am firmly convinced that a plan similar to the one thus outlined is not only feasible but practical. We have a splendid example of the great possibilities of a cooperative plant of this kind in the cannery at Puyallup, which is under the successful management of Mr. W. H. Paulhamus, who has probably more canning information "canned" in his spacious cranium than any other individual in the Northwest, and who is unselfishly willing to impart some of his knowledge to others and to allow others to benefit by his experiences.

Great strides have been made in recent years in the improvement of machinery employed in the by-products industries. This applies particularly to the various appliances used in canning. Progress is also being made in the improvement of evaporating machinery, both for the preparation of the fruit to be dried and for the drying process itself. In considering evaporators, it should be remembered, however, that the type of plant to be installed will depend largely upon the conditions obtaining in the district in which the

plant is to be located. A number of evaporating or dehydrating plants are now on the market and much is claimed for each individual type. It is recommended that great care be taken in the selection of any of these new types, and that expert advice be secured before the purchase is made. The selection of the proper machinery for the preparation of the raw material is of equal importance. When it is considered that it requires practically eight pounds of green apples to produce one pound of the dried fruit, and that the eight pounds of the green apples must be peeled, bleached and sliced, before being submitted to the drying process, it will be understood that highly economical methods of preparation must be employed. Excellent paring machines with automatic feeding attachments are now on the market, and self-feeding slicing machines can be purchased. In fact, an evaporating plant can be so arranged that from the time the apple leaves the trimmer it need not be touched until it is ready to go into the kiln, tunnel or cabinet, according to the type of evaporator used.

The markets for our manufactured by-products are both at home and abroad. Reports by those who are considered authorities on this subject, indicate that the marketing of our canned fruits is limited to the markets of the United States and Canada and to England, while our dried fruit can be sold to practically every country in Europe and Asia. The opening of the Panama Canal also offers great opportunities, owing to a material lowering of freight rates and this will naturally have a marked effect upon the industry. In conclusion I wish to say that to my mind the by-products industry is the anchor of hope to the Northwest, and the sooner this is realized, the better and brighter our future will be.

DO FARMERS THINK?

This question was suggested by the inquiry made by the Muskegon Knitting Mills, offering to pay \$10 to anyone who would give them a logical reason for wearing pointed-toed hosiery on right and left feet. They first wrote to their customers, then advertised in the papers and magazines. They have received many replies, but most of them expressed the same idea, which was: "I never thought about my hosiery before."

Judging from the outlines of the feet which many of these parties sent in, they must have suffered untold agonies from bunions, ingrow-

ing toe nails and corns, and yet they never thought.

A man's feet are made right and left. He wears right and left shoes. Sometimes he wears a pointed-toed shoe which crowds his toes and makes them look like the accompanying illustration, but even if he wears the nat-



ural shape shoe, as shown in this illustration, with a pointed-toe sock, he pinches his toes just the same.

You have often noticed that your sock wears out first on the large toe. This is because the great toe is trying to keep straight, while the stocking is trying to pinch it into the middle of the shoe, with the result that the pressure against the sock makes a hole.

The Muskegon Knitting Mills have lately secured a patent on a new idea in hosiery known as Haight's Right and Left Comfort Hose. These are made rights and lefts, the same as the natural shape shoe. They give the wearer the pleasant sensation of being barefoot. They wear even longer than the famous Vegetable Silk Hosiery manufactured by this concern for the last twenty years, and are certainly logical in design. They are made in heavy wool socks for winter, or medium weight vegetable silk, at 50 cents per pair; also different weights of cotton at 25 cents per pair.

The Muskegon Knitting Mills sell their product directly from the mills to the consumer, through the mails, and any reader of "Better Fruit" can secure a sample pair of this modern style of hosiery by sending a money order for the proper amount, with the outline of the foot, to show the size required, to the Muskegon Knitting Mills, Muskegon, Michigan.

Look at the illustration, and decide which foot looks like yours. If you are suffering with bunions, or cramped toes, STOP AND THINK—WHY PINCH YOUR TOES ANY LONGER?—Ad.



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Over 100 styles of fencing at **unmatchable** prices. We sell more fencing direct to the consumer than any other concern in the Northwest.

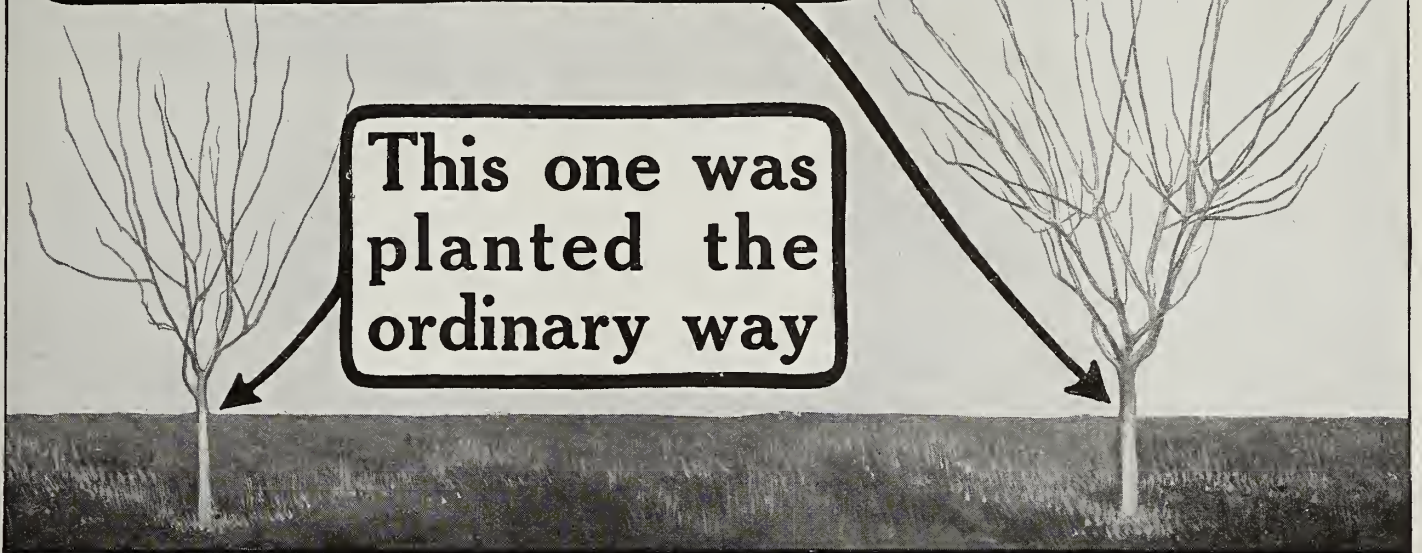
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WHOLESALE SUPPLY HOUSE
93 Front Street, PORTLAND, OREGON

**This Tree was planted
in a BLASTED Bed**

**This one was
planted the
ordinary way**



Herman H. Smidt, R. F. D. 3, Oregon City, Oregon, owner of these trees, read in *Better Fruit* that trees planted in blasted soil would grow faster and be better in every way than trees set in dug holes. He tried it, and on February 14, 1916, wrote as follows:

"I intended to blast the whole orchard but ran out of powder and finished a small balance without it. I am glad of this now because it has enabled me to compare the growth of the trees and satisfy myself that the expense was justified.

"My orchard was planted three years ago and all trees were selected and of even age and size. The trees that were planted in blasted ground show a growth of 75 to 100 per cent. over the trees in ground not blasted. They are healthier and more satisfactory in every way, and I have no hesitation in recommending

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to the prospective orchard owner. I have just bought 1100 more prune trees and would not think of planting them without preparing the ground with powder.

"My method is very simple and expense per tree very small. I drive a bar into the ground about four feet and explode one-half to one stick of powder in each hole. I then spade out the hole for the tree on the spot that was blasted.

"Thank you for getting the three boxes of Giant Powder for me so quickly."

Hundreds of fruit growers have found, like Mr. Smidt, that trees set in blasted beds grow faster and larger and bear earlier than trees set the ordinary way.

These men have found also that the Giant Farm Powders—Eureka Stumping or Giant Stumping—are the proper explosives to use in tree planting. They pulverize the soil for several feet in every direction, instead of caking and packing it. When you use the Giant Farm Powders you save money and get better results.

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They roll away the old-time door troubles by preventing and overcoming the balky, off-the-track or frozen-up door. The Adjustable Construction permits a door to be raised or lowered, or moved in or out, as conditions require—A monkey wrench does the trick. Roller Bearings and Large Trolleys insure light operation. Stayon Device prevents door being thrown off the track. Flexible Hinged Joint produces tight fitting doors. You get all these features on MYERS DOOR HANGERS. You also get High Carbon Flat Stayon Track or Reinforced Girder Tubular Track. Myers Giant and New-way Hangers for Tubular Steel Trac — The All Weather Hang ers—are our latest productions—They add the finishing touch in door service on any building.

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conserved throughout the entire season. This can only be done by pulverizing the soil and continuing to maintain a dust mulch. There are several types of pulverizers on the market which are made of heavy iron rollers, grooved so as not only to cut up clods but mash them very completely. The use of pulverizers is particularly desirable,—in fact practically necessary if the fruit-grower allows his soil to be at all cloddy, which is very likely to be the case where there is clay in the soil. Some pulverizers are made with double rollers following each other; in some cases an efficient seeder attachment goes with the pulverizer which is found very efficient among grain farmers and for crops such as clover, alfalfa, etc., where the seeds are small and not sown very deep. These do much better where the ground is pulverized thoroughly and well rolled. Dry farming has introduced many new implements which are of great value also in countries which are known as semi-humid or humid climates. By thoroughly pulverizing the soil and rolling the surface, very dry climates have been successful in conserving the moisture and have been able to produce very fine crops, while without such methods

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Raisin Industry Increases

The California raisin crop is now about three times as large as that of Spain, according to a recent publication of the United States Department of Agriculture. About 60 per cent of this crop is grown in Fresno County alone. Last year it is estimated that the entire California crop amounted to 250,000,000 pounds. This unquestionably could be greatly increased if the demand warranted it. As a matter of fact, however, it is the practice to produce only enough raisins to supply the existing demand. In this connection it is interesting to note that as the domestic crop has increased, the importations of raisins have correspondingly decreased. In 1885 the imports amounted to over 38,000,000 pounds; in 1915 they were less than 3,000,000.

In the early days of the industry high prices were realized, the average from 1889 to 1893 being about 5 cents a pound. Prices then began to fall, however, until in 1897 raisins were quoted as low as 3/4 of a cent a pound. The growers then perceived that in order to make the industry profitable coopera-

tion was necessary. The first association disbanded after a career of approximately six years. Another attempt also proved a failure, and it was not until 1912 that a really successful organization was formed. An active effort is being made by this organization to bring raisins into more general use.

Bulletin No. 349 of the United States Department of Agriculture, "The Raisin Industry," has now been published. This bulletin gives much information on the raisin industry, the kind of soil required, the various methods of pruning, the varieties and methods of harvesting and packing. It points out also that as the raisin vines are not resistant to the Phylloxera, in order to make permanent, durable vineyards they should be grown on Phylloxera-resistant stalks.

Pulverize Your Soil Thoroughly

There is no crop which necessitates conserving the moisture more than the fruit crop, and the apple crop in particular, for the reason that apples grow through the entire year up to October or November, and moisture must be

BERRY BOXES AND CRATES

IMPROVED ONE-PIECE FOLDING

TOP STITCHING the one-piece bottom makes the box open up perfectly. No loss from misfits and breakage as with the old style, and the bottom never drops out.

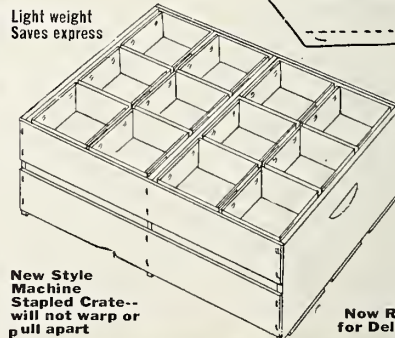
Compare this new box with any box on the market.

PRICES

Folding Hallowells \$3 per 1,000
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Write for prices in large lots.

Light weight
Saves express



New Style
Machine
Stapled Crate--
will not warp or
pull apart

Now Ready
for Delivery

PORTLAND SEED CO.



they would not be able to do so. The editor has used a pulverizer in cultivating his orchard, the soil having some clay, and he considers it a very valuable implement.

New Handbook on Land Clearing

Up to this time there has been nothing in print which deals solely with the best methods of removing the stumps in the Pacific Coast states. The books offered by manufacturers nearly always deal with Eastern conditions. Now comes a book which has been prepared especially with Western conditions in view. In type and picture it tells all about the best methods of getting rid of stumps economically and easily. It is published by the Giant Powder Co., Con., of San Francisco, who are the oldest makers of high explosives in America, and who manufacture the Giant farm powders for stump blasting and other farm work. The book is called "Better Stump Removing," and is full of information about high explosives, their selection and use. It tells how to get the best results in blasting out stumps, but it does not neglect to describe other methods of removing them and to tell how they may be used in connection with blasting, if need be. Much of the stump blasting that has been done in the West has been done wastefully. The blasters have ignored what are apparently insignificant details. But it is these little things which make the difference between profitable and unprofitable clearing, and which run up the cost. Land can be cleared by proper methods with ease, speed and at low cost. The book explains how. It is sent free on request.

Automobile Owners Receive Good News

The greatest boon to the automobile owners has just been given them recently in the form of a tire constructed of double the thickness of such tires as Diamond, Goodyear, Firestone and other standard makes. This added thickness in wearing surface makes the tires the best on the market today for real service, as they are puncture-proof and withstand great wear and hard service. Notwithstanding the many added features of these tires, they are being sold now as an introductory offer at a price about 40% lower than the regular price of standard tires. These tires bear a 7,000-mile guarantee, which is also double that of the regular made standard goods. These tires are being sold direct to the consumer by the Double Service Tire & Rubber Company of Akron, Ohio.—Adv.

THE LIGHTEST OF MICHIGAN SAND LANDS ARE NOW BEING MADE AS VALUABLE AS THE BEST CLAY LANDS IN OREGON

The Hood River fruit growers will be interested in knowing that the "pine barrens" of Michigan are now being reclaimed, and made to produce the highest grade of fruit, and as much wheat or clover hay as the best lands in Oregon.

Louis P. Haight, editor of "The Sand Farmer," has conducted thousands of experiments at the Haight Demonstration Farm during the past fourteen years, and has discovered the secret of making sand lands productive.

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The first automobiles were spoken of as "horseless carriages." When they began to supplement horses instead of replace them—to do things impossible for horses to do—this term became obsolete.

The Yuba BALL TREAD tractor does the work of horses and it does things impossible for horses to do.

The orchardist uses it to pull tools that horses are unable to handle. He uses the Yuba to handle the heavy double disc cultivator—which at one operation does the work of the horse-drawn weed cutter, tooth harrow, the light single disc and the clod masher—and he gets close to the trees!

The grain farmer works his Yuba day and night, plows deeper, does his work when the land is in the right condition, and is less dependent on the weather.

Sandy roads or muddy fords are easily crossed by the freighter.

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CHECK CROP RAISED

...Fruit...Grapes

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.....Alfalfa

....Hops

..Hay

To answer the many inquiries he has been receiving from all parts of the country he is now editing a monthly magazine called "The Sand Farmer," in which he is telling how any sand lands supplied with sufficient moisture can be made to produce as large profits as any other kind of soil. The subscription price is \$1.00 per year, and it is well worth the price to anyone owning sand land.

Mr. Haight is also publishing his new book, "Sand Farming," in "The Sand Farmer." This book gives the result of his years of study and many original and interesting experiments. The price will be \$1.00. Anyone subscribing to "The Sand Farmer" now will get this book free. Ten cents and your address mailed to "The Sand Farmer," Muskegon, Michigan, will bring you a sample copy.—Adv.

BETTER FRUIT

HOOD RIVER, OREGON

Official Organ of The Northwest Fruit Growers' Association
A Monthly Illustrated Magazine Published in the
Interest of Modern Fruit Growing and Marketing
All Communications Should Be Addressed and Remittances
Made Payable to

Better Fruit Publishing Company

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Entered as second-class matter December 27, 1906, at the
Postoffice at Hood River, Oregon, under Act
of Congress of March 3, 1879.

"Revolving the Consumer's Dollar Backwards."—A year ago in the May edition of "Better Fruit" appeared an article on this same subject by Mr. G. Harold Powell, general manager of the California Fruit Growers' Exchange. Those who read the article last year will be doubly interested in Mr. Powell's contribution on this subject this year, as his article which appears elsewhere in this edition shows the difference between the results in 1914 and 1915 for the orange growers of California. While it is not necessary or the intention in this editorial to go into this subject in detail, it seems important to call the attention of the fruitgrowers to a few important facts brought out by Mr. Powell in a comparative way on the 1914 and 1915 crops. In 1914 the orange grower received \$1.2896 per box for oranges on the tree—27 $\frac{1}{10}$ per cent of the consumer's dollar. In 1915 he received \$2.1896 per box, which is 90 cents per box more, or 40 $\frac{1}{10}$ per cent of the consumer's dollar, or 12 $\frac{1}{10}$ per cent more of the consumer's dollar; the harvesting, packing and selling costs, freight and refrigeration per box were the same. It is important, however, to note in connection with this statement that on the increased price the percentage of cost of the consumer's dollar is reduced for the year 1915. The jobber's margin in 1914 was 42 cents; in 1915 it was 44 cents per box, however, showing a reduction of nine-tenths of one per cent in favor of the grower. But perhaps more important than any of the above transactions in handling is the fact that the retailers' profit, which "Better Fruit" and the editor have for years claimed to be too large, was reduced from \$1.49 per box to \$1.35 per box, or 14 cents per box less. In other words, the retailer received 32 $\frac{1}{10}$ per cent of the consumer's dollar in 1914; in 1915 the retailer received

24 $\frac{1}{10}$ per cent. In other words, the retailer made 7 $\frac{1}{10}$ per cent less profit, which went to the profit of the fruit-grower, whom we all know needed it mighty badly. While it must be taken into consideration that these results are obtained in the orange industry, nevertheless they serve as a valuable object lesson to the apple grower, for the reason the orange grower has been getting a much greater per cent of the consumer's dollar for his fruit on the tree than the apple grower ever received, and on top of this in 1914, under the able management of Mr. Powell, in co-operation with the dealers and retailers, through whom the orange growers did business, the grower's per cent of the consumer's dollar last year was increased from 27 $\frac{1}{10}$ per cent in 1914 to 40 $\frac{1}{10}$ per cent in 1915, which, in connection with the increased price received by the orange grower, gave the orange grower for the year 1915 90 cents more per box for oranges on the tree.

Just what this would mean in the apple business in a general way for the Northwest is difficult to say at the present time, for the reason that no average figures have ever been compiled showing definitely what the apple grower got out of the consumer's dollar, neither is the percentage for the apple industry paid for harvesting, packing, selling, refrigeration, jobbers' and retailers' portion known in a definite way. Some work along this line would be the most valuable kind of work that could be done for the industry in the Northwest. There is no question but what it would result in some costs which are now exorbitant being reduced, which would mean that the fruitgrower would receive a greater proportion of the consumer's dollar than he has ever received in the past. Without question it is a fact that the apple grower does not get the same percentage of the consumer's dollar as the orange grower. One apple grower who put out a high-class product of high-priced varieties received an average of 60 cents per box in 1914. If the apple industry showed the same improvement in 1915 in the way of prices that the orange industry showed, the apple grower would get 90 cents more per box in 1915, or, in other words, he would get \$1.50 per box. If this apple grower gets \$1.25 per box he will probably consider himself fortunate. The apple industry should be able to secure for the grower just as high a per cent of the consumer's dollar as the orange industry. This is a great big problem that is before the apple industry of the Northwest today. It is a problem that everybody should interest himself in solving. It is a subject which every fruitgrower, every salesman, every banker and business man and everyone connected with the industry should study and endeavor to solve. It can be done because the orange growers have done it. It must be done before the apple grower will get what he is entitled to.

Community Packing House.—The subject of community packing houses is being discussed in many fruit districts of the Northwest. Therefore it is with considerable pleasure that "Better Fruit" presents a timely article, which appears elsewhere in this edition, by Mr. S. V. Beekwith, manager of the Rogue River Fruit and Produce Association, which contains some very interesting and valuable information. The growers are fully impressed with the necessity and importance of standardization, uniform grading and packing. Associations and fruit operators find it very difficult to get uniform grading done when the packing is done in individual packing houses by small growers. It is impossible to provide a system of inspection and a force large enough to keep continual watch over several hundred small growers. The community packing house is the logical method for uniform grading and standard packing. In addition to this it is a well-established fact that packing in community packing houses can be done at a much lower cost. Where the grower has five, ten, or possibly fifteen or twenty acres, it is difficult for him to provide himself with the necessary equipment, introduce efficiency methods and conveniences, which are necessary to keep the cost down to a minimum. If a grower has forty acres, turning out twenty cars or more a year, his business is large enough so he can keep down the cost by introducing the necessary system of efficiency and inspection to put out a uniform pack and standard grade, but where acreages are much less the community packing house seems to be the only solution for the problem of more perfect standardization, which is without doubt an absolute necessity for the future in marketing the fruit crop to the best advantage.

Apples on Cold Storage.—According to the United States Department of Agriculture bulletin issued April 7th, the amount of box apples on cold storage March 1, 1916, was 1,995,976; April 1st, 1,287,452, showing a reduction in March of about 700,000 boxes. With the present number of boxes on hand April 1st, it will take nearly two months, April and May, to clean out the present holding. As everybody knows, fresh vegetables and strawberries from the Southern States come on the market in April; it is therefore evident that the amount of box apples on storage the first of April is too large. It is also evident, after the 1915-16 experience, that a movement should be made to reduce the cold-storage holdings earlier and more rapidly. In reference to the combined holdings of barrels and boxes, expressed in barrels, on cold storage March 1, 1916, was 3,248,019; April 1, 1916, 2,017,512, or a reduction of about one million. At the rate of sales during the month of March it would take April and May to clean up the holdings, which again illustrates the fact that there are too many apples on cold storage, of both

barrels and boxes, the first of April, 1916, which makes it very evident that the holdings are held too long. Apples should have been moved earlier and more rapidly. The holdings of barrels and boxes, expressed in barrels, April 1, 1915, was 1,343,117; April 1, 1916, 1,932,085, or 43 $\frac{1}{2}$ per cent more than last year. This is further evidence of the fact that the apples were not moved early enough or fast enough this year in order to make a satisfactory closing season, or to make satisfactory prices. With the quantity of apples held this year it is evident a good many will suffer.

The Enforcement of Horticultural Laws.—The experience of Mr. J. W. Pomeroy on the "Enforcement of Horticultural Laws," which appears in this edition, is well worthy of every fruit-grower's attention. The complaint on the lack of enforcement is general. Many people blame the laws for being deficient, others blame the inspector for being negligent. Mr. Pomeroy's experience is not only interesting but valuable. There is no question about the correctness of his attitude, which is that fruitgrowers can be educated to the necessity of conforming to the laws, and that enforcement of the laws will be much easier and the laws more generally complied with. No matter what your views are on the subject of horticultural laws and inspection, you will find it worth while to read what Mr. Pomeroy has to say. It is every fruit-grower's duty not only to understand the laws but to comply with them. Every fruitgrower should understand the laws and obey them. He should do more than this,—if his neighbor is negligent he should endeavor to impress upon him the necessity of complying with the law, not only for his own interest but as a duty to his fellow orchardists. Without question if the right kind of educational work is indulged in by all the fruitgrowers who are anxious to do the right thing that much better results can be obtained in the way of having horticultural laws lived up to to the letter.

By-Products.—It is time for the fruit-growers to begin to think about the large crop that is being generally reported in all districts this year. It is time for them to begin to think about what may happen. It is time for them to begin to prepare to take care of the surplus if the markets become glutted, as they probably will. Therefore the subject of by-products should now command the attention of the fruitgrowers. Consequently the growers should give immediate thought to the by-product business, canneries, evaporators, vinegar factories, cider plants, etc. Growers should not only make up their minds what is necessary to be done with the surplus, but before the surplus exists they should provide themselves with the facilities for taking care of it and saving it. Arrangements for such equipment, machinery, etc., that is necessary should be made early in order

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Elsewhere in this paper you will find factory advertisements of nationally known lines of orchard and farm implements—handled in the Northwest by us and our agents.

Myers Spray Pumps and Power Sprayers

A line we have handled for years. We carry the Largest Stock of Spray Pumps and Fittings on the Coast.

Light Draft Harrows

We assisted in the development of this wonderful harrow. Nothing Like It for Orchard Cultivation.

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We do not handle imitations. When you want a Double or Single Action Cutaway buy the Original Clark Harrow and you make a safe investment.

BIRDS OF A FEATHER FLOCK TOGETHER

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Mitchell
LEWIS & STAYER CO

Portland, Ore.
and
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THE HURST STEAM FRUIT EVAPORATOR

A Few Reasons

Why it is adapted to *Your* needs

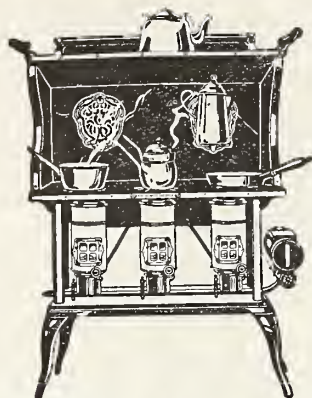
- 1 The Hurst Evaporator is built in units of $\frac{1}{2}$ ton capacity of green fruit in 24 hours. You can add one or more units any time without stopping the operation of the first unit.
- 2 Each unit is controlled by a separate automatic temperature regulator with a range of 30 degrees from 150 to 180. Experience has taught us that this range brings the best results in evaporating.
- 3 Any style boiler may be used having a pressure of from 50 to 100 pounds.
- 4 The Hurst Evaporator is shipped **knocked-down**—saving you freight. It can be set up very easily from the plans we furnish with each shipment.
- 5 The Hurst Evaporator is built like a cabinet—screws only are used. Each unit requires floor space of 34" by 100". It stands 86" high.
- 6 Glass doors on both ends permit you to see the condition of the fruit at any time.
- 7 Italian Prunes can be evaporated in 14 hours—Apples in 2 hours—Loganberries in 12 hours.
- 8 Made in one size **only**.
- 9 Made on order only.
- 10 Each evaporator is thoroughly tested before shipment is made.

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Bakes, boils, roasts, toasts. More efficient than your wood or coal stove and costs less to operate.

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*For Best Results
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**Better cooking
and a cleaner,
cooler kitchen.
Now serving
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to have the plants ready when the season arrives. As Captain Paul H. Weyrauch has given the matter a great deal of investigation, having served on the By-Products Committee, in addition to being manager of one of the largest orchards in the State of Washington, his ideas are certainly valuable, consequently it seems wise to urge every fruitgrower to read what Captain Weyrauch has to say in his article on this subject appearing elsewhere in this edition. Make up your mind what you are going to do and then do it.

Small Fruits.—A great deal has been said upon the subject of diversity, pro and con. Many are advocating that the fruitgrower engage in the dairy business in connection with orcharding. Others are suggesting they raise hogs. Still others go even further and advise the fruitgrower to become a general farmer. Professor C. I. Lewis of Corvallis, who is recognized as one of the most practical horticulturists of the Northwest, had an article in "Better Fruit" that expressed his views, which appeared in the February edition, in which he advocated the fruitgrower should engage in diversity, advocating primary diversity in the raising of fruits, including small fruits. There are many fruitgrowers whose land is suitable for the production of small fruits. A moderate acreage in small fruits will be very helpful in equalizing the income of the fruitgrower at different times of the year and in different seasons, and it also helps to equalize the help problem. Mr. J. C. Stuart has had many years' experience in the growing of all kinds of small fruits. His valuable suggestions and ideas are incorporated in an article which appears for the benefit of the fruitgrowers in this edition.

Fire Extinguishers.—A little experience on the part of the editor this winter affords a valuable suggestion for every fruitgrower and farmer. One of the men working for the editor in attempting to thaw out the pipes in the tank house with a blow torch set the tank house on fire. Some time ago the editor put in two fire extinguishers. With the aid of these the fire was extinguished, saving the tank house from destruction. A number of fire extinguishers are on the market now at very reasonable prices. Every fruitgrower and farmer should have one or two on hand. A good fire extinguisher, used at the right moment before the fire gets much headway, may save the house or barn from burning and prevent a serious loss.

The Retailer's Profit.—"Better Fruit" has continuously and consistently maintained for many years that the retailer's profit in apples is too high. It is an established fact that many retailers charge an exorbitant profit. It is well known that in some cities the retailers as a class make unreasonable profits. Whenever a retailer makes an

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7,000 acres planted to winter apples. Gravity irrigation. Located 22 miles north of Spokane, Washington, directly on the railroad. We plant and give four years' care to every orchard tract sold. \$125, first payment, secures 5 acres; \$250, first payment, secures 10 acres; balance monthly.

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For you to secure the best results from your acres you should use a proven fertilizer.

"Beaver Brand" Animal Fertilizer

has made good as a result producer for *quality* and *quantity* strawberries. Beaver Brand "D" Animal Fertilizer as made by the Union Meat Company has demonstrated to those who have used it that our claims are not a theory but are based on facts.

Whether you have one acre or a hundred acres you should *prepare now* for next year and apply this famous fertilizer after your harvest.

"Beaver Brand" Animal Fertilizer

contains the proper amount of nitrogen, phosphoric acid and potash to supply your soil with plant food for next year's *maximum quality crop*.

Prepare for those results and place your order *now*. Address Box 101 for free booklet that will tell you all about fertilizers.

UNION MEAT COMPANY

North Portland, Oregon

unreasonable profit it comes out of the consumers' dollar and means just that much less money for the fruitgrower. While the average per cent of the consumer's dollar obtained by the orange grower in 1915 was 40 $\frac{3}{10}$ per cent, when the retail margin was extremely high, the grower received only 19 $\frac{5}{10}$ per cent of the consumer's dollar. There is a big difference between the fruitgrower getting 40 $\frac{3}{10}$ per cent of the consumer's dollar and getting 19 $\frac{5}{10}$ per cent of the consumer's dollar—most all this difference being absorbed by the retailer through charging an exorbitant profit. The average retailer's profit was 24 $\frac{4}{10}$ per cent for 1915. The profit of the exorbitant retail dealer in 1915 was 46 $\frac{3}{10}$ per cent.

Stock in Connection With the Orchard.—A great many fruitgrowers are going into the dairy business in a small way. In order to obtain the best results in the way of dairy products the silo has become considered a necessity. The small orchardist who wants to keep a few cows, grow his own hay, with the use of a silo can provide the best possible feed,—feed that will give the best results in the way of milk and butter fat. By the use of a small silo, which can be had at a very moderate figure, better profits can be made. Fruitgrowers who are engaged in the dairy business, or those who expect to engage in it, will find it worth while to investigate the silo.

Fire Blight.—Along about the blossoming time, and from then on for a few weeks, the most dreaded disease the orchardist has to contend with—fire blight—becomes active. It is something every fruitgrower should know about. It is a disease that every fruitgrower should know how to control. If you are not informed and not familiar with the disease it will be mighty good judgment on your part to consult your inspector, some horticulturist or some fruitgrower who has had experience. In this edition is an article by Professor F. D. Heald of the Experiment Station, Pullman, Washington, entitled "Some New Facts Concerning Fire Blight." Professor Heald is recognized as an authority on this subject, having had many years' experience, and therefore his article is very valuable and one that should be read by every fruitgrower in any locality where they have had fire blight.

Advertising the Apple.—The California Fruit Growers' Exchange spent \$350,000 on a \$30,000,000 crop, which is 0.5 per cent of the consumer's dollar, the consumer's purchasing price being \$5.43, would mean that the orange growers .02715 cent per box in advertising oranges, which will give the apple growers something of an idea of what is necessary for him to spend to carry on a national advertising campaign.

GO EAST

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Joins West and East with a Boulevard of Steel;

Parallels the Columbia River Highway;

Follows the famous Columbia River 200 miles by daylight;

Affords luxurious through service to Chicago and direct connections for Atlantic Coast cities,

Protected all the way by Electric Automatic "Safety" Signals.

Summer Tour Season Begins June First

Low Round Trip Fares to Eastern Points

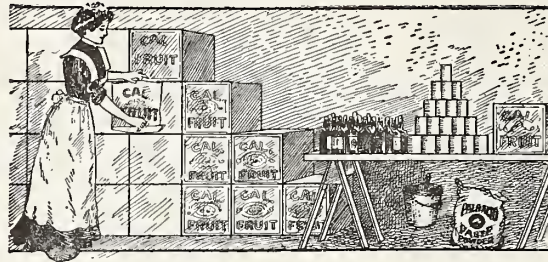
Union Pacific System
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PICK UP GUM, for use on Knapp labeling machines (very adhesive)
CEMENT, for use on Burt labeling machines. **LABELING GUM**, for use on all bottle labeling machines.
CELLULOID TIN LABELING PASTE, a RUST proof tin labeling paste.
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PALO ALTO PASTE POWDER—three pounds added to cold water makes two gallons fine white paste for all labeling work, or a RIBBON paste for labeling machines. Extensively used by canners and fruit packers.

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Centralization of Packing

By S. V. Beckwith, General Manager Rogue River Fruit and Produce Association, Medford, Oregon

MY subject covers two features that are vital to the success of deciduous fruit growing in the Pacific Northwest. First, the physical handling of the fruit; second, standardization of pack. To successfully grow good fruit, to cultivate, to prune, to combat scale, codling moth, blight, scab, Baldwin spot, water-core, and the other diseases that deciduous fruit is heir to; to produce good crops of good fruit every year—these are problems which call, in my opinion, for a high degree of intelligence and eternal vigilance. On the other hand, to successfully distribute and market the fruit when grown and produce good prices year after year, is another equally im-

portant and equally difficult problem demanding the best energies of the highest trained men in that specialty. But the production of good fruit and the intelligent marketing of it will not avail if the assembling and packing of the fruit is poorly done, resulting in an unattractive package and physical damage to the fruit itself.

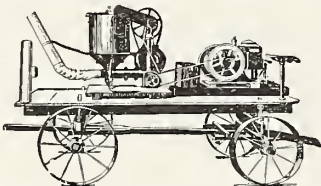
The Rogue River Fruit and Produce Association has just completed its sixth consecutive season as a co-operative deciduous fruitgrowers' association. In that period it has acquired not less than five different packing and warehouses as five widely-separated points in the Rogue River district, each packing house being located upon the railroad and having its own sidetrack. The most recent of these houses was acquired no less than three years ago. In the early history of our organization we packed the growers' fruit at each one of these five warehouses, having crews working in all of them at the same time, and in addition to this perhaps fifteen or twenty of the larger growers ran their own packing houses, at which their own fruit was packed under our supervision. This imposed upon the management a nearly impossible task—that of supervising and inspecting all of these packs so thoroughly and so successfully as to insure standardization and careful handling at all times. We did our best, but were distinctly not satisfied with the results. Another bad feature of this method was apparent in the handling of the early pears such as Bartletts and Howells. We found it physically impossible to clean up each one of the packing houses every night, and to pack out during the day every pear, whether first, second or third grade, that had been brought in the day before. Then again, even the packed Bartletts would of necessity lie around occasionally for twenty-four hours or longer before being loaded into an iced car. There

might be, for instance, only a half car packed and ready to roll, which would have to wait until the next day without refrigeration, for enough fruit to complete the car. I do not mean to say that this was a frequent occurrence, but in spite of our best efforts it would happen once or twice during a season.

In the spring of 1913 we built in Medford a cold-storage warehouse with a capacity of approximately forty cars of real refrigeration and sixty cars of dry storage. In 1914 we began to realize the possibilities of the auto

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**The Salof Self-Setting
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Per box, 50 cents; three boxes, \$1.40;
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PORTLAND, OREGON

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

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Does not require a large investment of money or time.

Silage is the money-making feed for dairy cows. It supplies a green, succulent feed in Winter-time when hay is high. Takes the drudgery out of feeding.

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To **SAVE LITTLE CHICKS**
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Our name and trade mark on every original package.

Beware of Imitations

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Our 1916 Catalog of "Diamond Quality" POULTRY SUPPLIES, listing everything necessary for the profitable production of poultry

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Portland Seed Co.
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Fruit Pickers Ladders

Just what fruit growers have been looking for. Combines lightness and strength. Any length. Wide spread at bottom which prevents tipping. Cheaper than home-made ladders.

Send for circulars and prices.

Pacific Ladder Works

85-87 E. 8th St.

Portland, Oregon

truck as an assembler of fruit. We tried this out in a small way during that season, hauling some pears and a considerable quantity of Newtown apples, loose in packing boxes, to our cold-storage plant in Medford. The experiment was so successful that we laid our plans in the winter of 1914-15 for complete centralization of packing at our cold-storage plant. We transformed our second story, by inserting plenty of windows, into an ideal packing room where we could, if need be, operate a crew of 100 packers. We built a conveyor at one end of our building, by the use of which one man could unload the fruit from the truck, and it would be carried to the second story, there to be received by roustabouts and distributed for packing.

Not being financially able to purchase our own trucks, we made early negotiations with all of the available trucks in our district, and arranged with them to haul the growers' fruit upon a regular tariff, based on the length of the haul and condition of roads. We concentrated at our cold-storage plant all packing supplies, gathering them in from our outlying houses. We offered to pack for the grower, furnishing all labor and materials, for the sum of twenty-five cents per box for pears and twenty-eight and one-half cents per box for apples, plus whatever the auto haul might be. We have permitted some growers with short hauls over exceptionally good roads to haul their own fruit, but wherever the haul was long or the road rough, we have insisted upon the use of the auto truck. Our largest truck has a capacity of two hundred and fifty packing boxes of loose fruit. We have hauled crops of both apples and pears a distance in some instances of fourteen miles. The bruising to the fruit has been negligible. In fact it is our experience that a good auto truck loaded to capacity rides as easily as a five-thousand-dollar touring car. Our operations began the first week in August with Bartlett pears and have been kept up continuously until the 13th of November, when our packing was completed. The hauling of the Bartlett and Howell pears, which are picked in extremely hot weather, was all done at night. The grower would advise us at the end of his picking day what he had to be called for. This he piled at some convenient place in his orchard where the auto truck was able to go. At any time between 10 o'clock in the evening and 3 o'clock in the morning the truck called for this fruit, and it was delivered at our central house during the cool hours of the night, received there by a night crew whose duty it was to segregate it according to growers' names, check up carefully the number of boxes received, place in each box a card bearing the name of the grower and stack it in front of the packing tables for the next day's operations. The packing crew came on at 8 o'clock, and in every instance cleaned up all of the fruit set before them for that day. As soon as

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Exposition juries at San Francisco and San Diego gave highest competitive awards to Zerolene—an oil from Western crude. Zerolene is the best oil for your motor because *scientifically* refined from selected California crude—*asphalt-base*. Government experts tell us that oils correctly refined from asphalt-base crude "distill without decomposition" [do not break up and lose their lubricating value under cylinder heat] and are "much better adapted to motor cylinders, as far as their carbon-forming proclivities are concerned, than are paraffine-base Pennsylvania oils." When you empty the crankcase refill with Zerolene. Dealers everywhere and at service stations and agencies of the Standard Oil Company.

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H. H. Eastman, Albany, Oregon—"I have used several makes, but I consider the Anker-Holth the most simple and well constructed separator I ever saw."

Geo. W. Johnson, Clackamas, Oregon—"It beats them all. I have had five different makes of separators."

THE J. C. ROBINSON CO.

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GOULDS SPRAY PUMPS

WHEN You Buy a Goulds Sprayer

You are not buying for this year or next alone—but for years to come. With it you have a guarantee that it will do the work as it should be done—year after year—and the guarantee is by a manufacturer whose reputation for high quality and fair dealing has been known the world over for more than half a century.

"How to Spray, When to Spray, Which Sprayer to Use"

An interesting and valuable book that tells about sprays and sprayers, gives valuable formulas and complete spray calendar. We want everyone who sprays to have this book. Free.



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Contains only
ARSENIC and
LEAD OXIDES.

NO FILLERS.

"CORONA" carries the highest possible percentage of arsenic oxide—33%—and is always uniform.

Mixes Quickly and Easily. Stays Mixed Longer and Sticks Better to Leaves, Branches and Fruit than Any Other Arsenate.

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the fruit was packed it was labeled and sent downstairs by gravity, either into an iced car or if necessary into our cool rooms, where it would be held twenty-four or forty-eight hours, or two weeks if advisable, under ideal conditions. With later varieties of pears and apples the necessity for night hauling was removed, although we continued to haul at night as much as possible because of the convenience of so doing. Thus we have had one crew

varying in size according to the amount of fruit to be packed, in constant operation since the first week in August. There has been one head packer over this crew, whose constant and only duty has been to supervise and inspect the pack. The growers have not purchased from us a single box or a single sheet of paper, and we know where every particle of material has gone and exactly what, if any, our waste has been. Perhaps fortunately for us the

crop of our district has this year been a light one and we have been permitted to work out this experiment under conditions which did not result in tremendous crowding. We have made mistakes, but no vital ones. We have gained the experience of a full season's work, and can most certainly correct these mistakes another season and improve in many minor details upon the general method. The improvement in the physical handling of the fruit, both from the standpoint of bruising and keeping the fruit in proper temperatures, and the improvement in our grading and general standardization of pack and mechanical excellence of it has been very marked. One large foreign buyer, after careful inspection of our methods and our packed fruit characterized the pack as the best he had seen. We are peculiarly fortunate in our district in having on the whole very good roads and comparatively easy hauls. Our association is also peculiarly fortunate in having cold storage facilities which are available immediately after the fruit is packed.

The possibilities of this system seem to me very far reaching. Our district and I believe every district in the Northwest, must come sooner or later to a co-operative use of our waste material. With all of our culls or otherwise unpackable fruit collected in one place, the day is not far distant when we may be able to install as an adjunct to our packing and cold-storage plant an up-to-date cannery and apple-juice factory. This will do away with the great problem of what to do with our culls, and while we all hope for the time when the percentage of culls shall be reduced to a negligible quantity, we all know full well that there never will be a year when a large fresh-fruit packing plant, such as ours is bound to be, will not have an abundance of waste material that can be advantageously turned into some by-product.

In conclusion let me say that centralization of packing has, in my opinion, come to stay; that it will do more, especially in connection with cold-storage facilities, toward the proper handling of our fruit and the proper standardization of our pack and improved deliveries in all the markets of the world, than any single plan or idea that has ever been tried out by the deciduous fruitgrowers of the Northwest.

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Some New Facts Concerning Fire Blight

by F. D. Heald, Professor of Plant Pathology and Plant Pathologist in the Experiment Station, Washington State College, Pullman, Washington

FIRE BLIGHT of apple, pear, quince and other hosts occupies a unique position among plant diseases since it is the first plant trouble that was proved to be due to bacteria. Although the disease had been known during the early history of the United States it was not until about 1880 that the bacterial origin of the trouble was definitely established by Dr. T. J. Burrill, then professor of botany at the University of Illinois. As a pioneer in plant pathology his name is inseparably connected with the early history of fire blight. His discovery, made thirty-five years ago, marked the beginning of real progress in our knowledge of the disease. A little later Mr. J. C. Arthur, in a New York Agricultural Experiment Station report, extended the work of Burrill and established the bacterial character of the disease upon a firmer basis. Since that time our knowledge concerning the etiology of the disease and methods for its control has gradually increased, and a voluminous literature has accumulated. It would neither be possible nor opportune to consider the historical development of our knowledge in detail, but I wish to point out a few of the prominent and important steps along the pathway of our progress.

In 1895 M. B. Waite of the United States Department of Agriculture showed the relation of bees to the spread of blight, proving that the bacteria multiply very rapidly in the nectar of the flowers and are then carried from flower to flower by the insect visitors. The part played by other insects in the dissemination of the disease has been studied more in detail by other investigators during recent years. In 1906 H. H. Whetzel of Cornell University Experiment Station published his work on the relation of the blight bacteria to cankers in apple trees, showing that these organisms were capable of producing cankers upon the larger limbs and trunk of the tree. The way in which the blight bacteria migrate through the tissues of the host plant had long been a disputed question, so the establishment of the fact by Freda M. Bachmann that they travel in the intercellular spaces, rather than by penetration of cells, must be considered of fundamental importance.

If we should sum up our knowledge concerning the way in which fire blight manifests itself we should find a general agreement, the four following ways being recognized according to the parts invaded: (1) Blossom blight, due to original infection through the nectaries by bacteria disseminated by in-

sects which visit the flowers in search of food. (2) Twig blight, due to infection through wounds made by insects or other agents in the succulent tissues of terminal shoots. (3) Fruit blight, due to primary infections through some wound or migration of the bacteria up the pedicel into the pulp of the fruit. (4) Cankers or body blight, due to migration of the bacillus down fruit spurs, from twigs or watersprouts showing twig blight or by primary infection through wounds.

I am going to speak briefly concerning a certain phase of fruit blight of apples and the occurrence of leaf invasions as a new phase of the disease which has only recently been established by the investigations of the writer.

Fire blight lesions of a very characteristic type may be produced upon developing fruits of the apple. If a young fruit is invaded through the pedicel it will be entirely destroyed, but if the infections are primary through the skin of the fruit the behavior may be entirely different. About the middle of June apples from some orchards infested with blight showed definite circumscribed spots, circular in outline and varying in diameter from three-eighths to one-half inch or more. The affected spots were dark brown or sometimes nearly coal black,

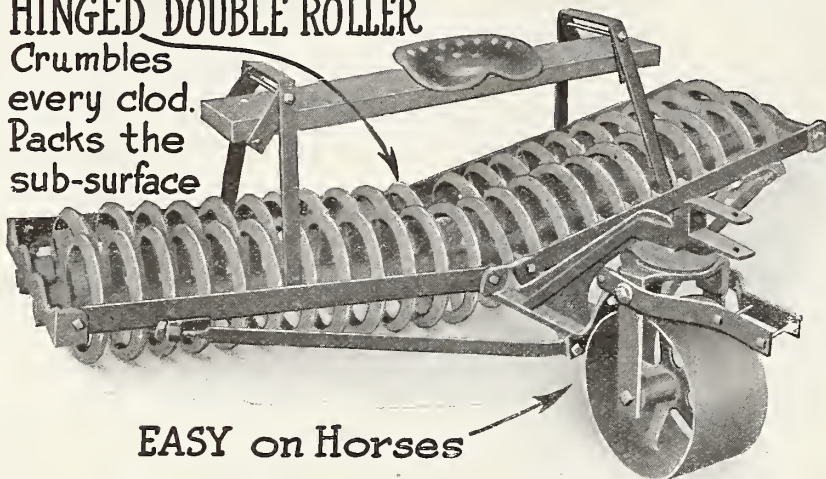
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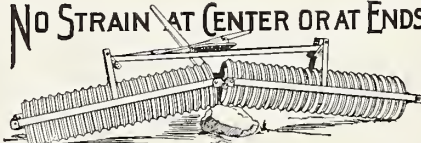


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somewhat depressed, and frequently surrounded by a border of red. Study showed that many of these lesions did not extend in area even when the fruits were exposed to the most favorable conditions for the development of bacteria and cultures from such showed that the bacteria were dead. In some cases there would be an extension of the lesion under favorable conditions, and cultures made from such specimens always gave the organism of blight. In all lesions of the type described the presence of bacteria could be established by microscopic examination. The affected tissue was always teeming with myriads of blight bacteria, either dead or alive. A small fragment of the brown tissue from one of these lesions when placed in a drop of water would invariably show a pronounced turbidity or milkiness due to the abundance of the bacteria which were scattered throughout the drop. This method constitutes an easy way of verifying the presence of the blight bacteria without the use of a microscope. This behavior of the blight bacteria in the fruit of the apple is in agreement with their behavior in blossom or twig infections. It is known

that the bacteria in fruit spurs and twig blight cease to grow and die out in many cases by midsummer. In the apple the bacteria develop for a time, producing lesions of varying size, but finally their growth ceases and they die in a high per cent of the infections, thus producing the definite circumscribed lesions which have been described. Whether insect punctures or wounds of some other kind are necessary for these fruit infections is an open question at the present time. It is undoubtedly true that some of these lesions originate from insect punctures, but it is worthy of note that no break of the skin can be found in many of these infections. It will require further work to demonstrate this point, but the writer is of the opinion that stomatal or lenticel invasions are possible.

Up to the time of the work published by the writer, no investigators had admitted the possibility of leaf invasions by the fire blight organism, *Bacillus amylovorus*. The opinions held by various scientists are outlined in the bulletin referred to and will not be repeated. Suffice it to say that a statement made by J. C. Arthur in re-

porting on his early investigations of blight has not been disputed by later workers. He wrote as follows: "Bacteria cannot be found swarming in the leaves as in the bark and wood; the conditions do not seem favorable for their development." As a result of preliminary observations and investigations carried out during the past season it can be definitely stated that leaf invasions by the blight organism are of frequent occurrence, and that the bacteria can be found in enormous numbers in the veins and mesophyll of the invaded portions. In connection with this statement it may be of interest to read a letter received from Dr. Burrill:

URBANA, ILLINOIS, November 3, 1915.

MY DEAR PROFESSOR HEALD:

I hold in my hand your "Preliminary Note on Leaf Invasions by *Bacillus Amylovorus*," Bulletin No. 125, and wish to say that I feel confident from my own observations that you are correct. This is, however, exactly opposite from my earlier observations and investigations. I remember I spread the viscid exudate from the twigs over the leaves above and below without results, and these tests doubtless served afterwards to prevent reference of leaf spots such as you describe to this cause. I have never seen the sticky substance exuding from the leaves, but have seen leaves which had all the characteristics of being infected. I do not think I ever tried to find the organisms in leaves by microscopic methods.

Your observations and experiments are important, and may lead to something greatly worth while.

Very truly yours, F. J. BURRILL.

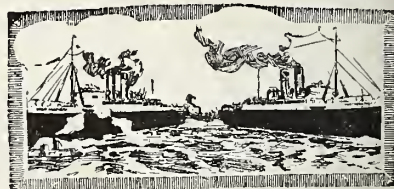
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* * *

Beauty is only skin deep, so is color on an apple,—it doesn't make the flavor.

* * *

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* * *

You can win on merit, but not on deceit. The inspector is your friend—not your enemy.

Knight Joins du Pont Organization

Thomas M. Knight has resigned as editor of the Practical Farmer, Philadelphia, to join the Agricultural Division of E. I. du Pont de Nemours & Company. Mr. Knight will aid the company in the extension of the use of dynamite in agriculture. He is a practical farmer, has an expert knowledge of fertilizers and is a popular lecturer on agricultural topics. Mr. Knight will collaborate with the company's agronomist, Dr. J. H. Squires, in field tests and lectures at agricultural colleges, and meetings of agricultural societies.

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Silo Important for Fruit Grower-Stock Raiser

By Geo. North, Portland, Oregon

THE keeping of live stock on the farm where there is but a small amount of land, a few years ago was regarded as an impossibility, is now beginning to be viewed in an entirely different light. There are yet, however, any number of people, while well informed in regard to the live-stock business as it was years ago, when range was plentiful, who are not familiar with the silo and the results of silage feeding, giving advice that is of no practical benefit to the men with a small acreage. Such men, not silo wise, even in these times of high prices of beef are finding it difficult to make the old-time profits. It is no exaggeration to state that some of the most profit-

able results in dairying are being experienced among the fruitgrowers who farm intensively, and in the nature of things, keep small herds, and, through the silo, produce their feed at little expense and at a minimum amount of labor.

The silo has fully solved the problem of keeping a moderate number of head of stock on a small amount of land. With a good silo, it is not only possible but practical as well as profitable for the orchardist to keep from a small to a large dairy herd, depending upon the size of the tract of land. The ability of the orchardist, through his silo, to supply his herd with a green, succulent feed at the time of year when the range

man's pasture begins to dry up and thus keep up the milk flow enables him to produce with a smaller herd as much butter fat as the man with a greater herd and no silo produces. Land not at present utilized for the growing of any crop will produce an astonishing amount of silage. Orchardists already having the investment in this land are, therefore, able to produce this crop without any extra investment. Even the labor is little, if any, greater than in keeping it free from weeds. The valuable fertilizer obtained is in itself a source of profit. The monthly or semi-monthly income derived from the sale of the milk or cream helps along wonderfully, and those starting in the dairy business in a small way will soon find, besides these items, the increase in their herd amounting to a very substantial sum.

The silo is a permanent institution and has come to stay. In starting to use silage as a feed, the thing of most importance is to start right. For the benefit of those who have never had any experience in feeding silage, a brief outline is here given of the most important things to be done in order to avoid several very common mistakes made by most beginners. The first thing to decide on is what kind of silo to erect. As a silo is exposed to the hot moisture when it is full and the hot sun and winds when it is empty, these cause the wood to shrink, swell and warp. But as the silo walls must be straight and true and must remain so from year to year, it is evident that the very best and most substantially constructed silo is the most economical and will bring the greatest returns on the investment. There are many types of silos on the market. Besides this, there is a vast number of so-called Silo Experts who are ready to instruct you how to build a silo for a small amount of money. Experience has proven that these cheap, home-made silos are a failure, as they will last only a year or two. They will twist out of shape and finally collapse entirely, when the farmer will be out not only the cost of the silo, but from

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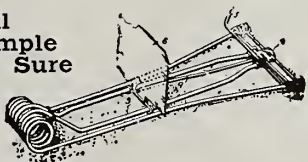
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\$300 to \$500 worth of feed besides, so that the greatest mistake that could be made would be to take a chance of losing this amount of valuable feed in order to save from \$30 to \$50 on the first cost of the silo. Besides this, these unsightly cheap silos are a continual eyesore on your place. They detract from its appearance. Sightly structures add to the value of your place.

The next to consider is what to fill your silo with. When to fill it. How to fill it. It is generally conceded that corn makes the ideal ensilage, but as that is a fall crop you should find some suitable crop for filling the silo in early summer. It has been found that a silo is needed fully as much in late summer and early fall as it is in winter, owing to the fact that pastures dry up until they are as bare as the street during the late summer months. The best summer crop for silage is, no doubt, vetch mixed with oats, but in localities where vetch cannot be grown successfully, other crops such as clover or alfalfa can be put into the silo with good results. This summer silage can be fed out, or as much of it as is needed, and then filled right on top with corn for winter use. Since the summer silage is frequently not all fed out before the corn is ready to put in, care should be taken to erect a silo large enough to give extra storage space in time of plenty, against a time of shortage. This extra storage space can usually be obtained by getting a silo of greater height than actual size of herd requires. The silo should be just as large in diameter as is possible to feed from one and one-half to two inches per day from the entire surface with the amount of stock on the farm at the present time, and then fully twice as high as the diameter. This will give about as much extra storage space as one-third of the capacity of the silo. This will also enable you to increase the herd without the expense of erecting another silo, which would also necessitate the cost and trouble of maintaining two silos as against one, if the first one put up is of the proper size.

Another common mistake made, and one that contributes fully as much to the cause of bad silage as an inferior silo, is putting the stuff into the silo too green. The idea prevails among most farmers that this is a green feed, so the greener the better. This is a serious mistake, for when silage is put up too green, too much acetic acid forms from the sap in the plant, which causes the bad odors and the sour ensilage so often met with. Any plant put into the silo should be allowed to stand until it has reached its full growth and has fairly started to ripen or dry up. Some crops, such as clover, and particularly alfalfa, should be cut and allowed to lie in the swath for a day or so (depending on the weather) to get rid of the sap. If necessary, then add enough water when filling the silo to give the proper amount of moisture. If this is done, and the silage is cut fine and well tramped into

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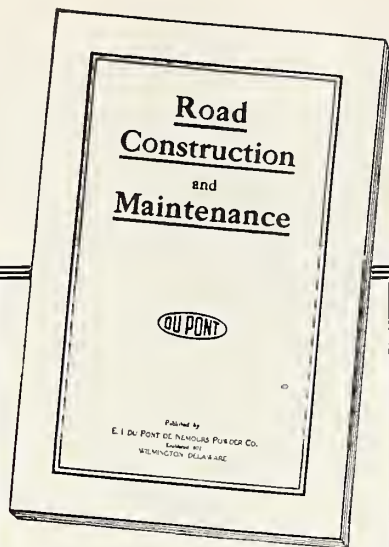
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Seven or eight acres of good vetch and oats will make one hundred tons of silage which is reasonably worth \$5.00 per ton to any one who has stock to feed. This, at a cost of perhaps \$65.00 in time and labor, leaves a sufficient profit on one filling to more than pay for the silo. Add to this the profit of the second filling the same year, with corn, and add the value of manure as a fertilizer, and it can readily be seen that any one with stock cannot afford to be without a silo. Those who have a farm or orchard without stock should get stock in order to make the profits that are possible with the intelligent use of a silo.

The Growing of Small Fruits

By C. J. Stuart, Monroe, Washington

FOR the past twenty years the writer has been closely identified with the shipping and growing of berries in Western Washington. He has seen during that period shipments of berries to points east of the mountains grow from a few hundred cases annually to almost an equal number of carloads.

To begin with, any well-drained soil in Western Washington, or Oregon as well, that will raise a good crop of potatoes successfully, will grow berries with proper care and cultivation. A well-planned berry farm, say of twenty acres, should have all the desirable varieties of berries common to Western Washington, and should plan to plant those kinds that ripen at different times covering a season extending from May to October; such a plant would enable the owner to distribute his labor over a longer period, have a less number of pickers, and a better class, by giving them longer jobs, besides lengthening his shipping season, and giving his customers the different varieties.

On this farm of twenty acres I would plant one acre of Champion of Oregon gooseberries, in rows and hills five feet apart; this gooseberry is the only variety that is a reliable, regular, and full bearing mildew proof berry that I have ever found suitable for this climate. Spray them annually in March with lime-sulphur, and again when the blossoms are fading with arsenate of lead, thereby insuring a wormless berry and free of mildew.

The next planting should be one acre of Victorian currants. Plant them the same distance apart, and spray as gooseberries; drive a stake about four feet long and three inches square at each hill and tie your plants thereto; this will give them an upright growth, and facilitate spraying and picking. The Victorian is a late blossomer, and in consequence misses the late frosts, is a heavy bearer as well as a sure one, and the fruit will hang two or three weeks on the bushes after ripening, and does not shell when being picked as other varieties do.

Plant one acre of strawberries. I plant the Marshall, but believe the Klondike possibly better. It ripens better at

TOP DRESS all your Crops with Nitrate of Soda alone, no matter what other fertilizers you may have used. 100 pounds to the acre for seeded, and 200 pounds to the acre for cultivated crops will do the work. The increase will yield large profits over the cost.

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
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PORTLAND, OREGON

Whittier-Coburn Company
San Francisco

The logo is a circular emblem. In the center is a detailed crown with three main peaks and a cross on top. The crown is surrounded by a decorative, sunburst-like border. The words "RED CROWN" are written in a bold, sans-serif font along the top arc of the circle, and "GASOLINE" is written along the bottom arc. The entire logo is set against a background of a dark, industrial scene with several tall smokestacks emitting smoke.



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We now have but one acre out of the twenty left; this plant to sour or pie cherries, Montmorency preferred. There

is a growing demand for them, both in our nearby and distant markets. They should be planted about twenty feet apart, and do not require much pruning or spraying; are almost immune from gummosis.

Such a farm would give the grower almost steady work during the entire year, and by rushing the work, instead of letting it rush you, but little help will be necessary, other than during the picking season.

Berries should have shallow and frequent cultivation during the growing season, keeping down the weeds and grass, and conserving the moisture; in other than strawberries, two hoeings during a season would ordinarily answer; stop your cultivation after the berries have ripened, and allow weeds and grass to grow in the rows, to serve as a cover crop; over cultivation or rather continuous cultivation is injurious to the land.

Just as soon as you have finished picking a field of berries, remove the old canes and burn them, thereby removing the possibility of your new canes being infected with fungus diseases from the old canes.

I find on close observation that the profitable life of berries is shorter than generally supposed. My record shows that currants and gooseberries cease to be profitable after bearing seven crops; raspberries six; blackberries and black-cap raspberries five; dewberries are an exception, however. They seem to have a perpetual useful life.

The production of berries on the Pacific Coast seems to have grown faster than the consuming population in our Eastern markets, and in consequence prices are being cheapened, and economy and vigilance must be practiced.

With a suitable location near a good association and cannery I would have no hesitation in recommending the planting of a berry farm, such as described above; but as in all other lines of business, capital and experience are two needful things to insure success.

Spraying Suggestions

Spraying suggestions for use in the Hood River Valley, to kill leaf roller, aphid eggs, San Jose scale, blister mite, etc., and for the control of fungus scab, mildew and codling moth on apple trees:

1. Late dormant spray, to kill leaf roller eggs and aphid eggs. Dormant soluble oil or miscible oil No. 1 diluted and mixed with water at the rate of twelve gallons for each 200-gallon tank of spray. Thoroughly cover every part of every tree, especially the terminal buds, fruit spurs and smaller limbs. Hold the nozzles close to the limbs and buds and use machines giving high pressure so that the spray will be driven against the surface of the tree with the greatest force. Use large chamber type mist nozzles with small opening to produce a "mist" or "covering" spray.

2. Early pink spray, for scab control. Use 33-degree Beaume (25 per cent sulphur in solution) lime and sulphur so-

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lution mixed with water at the rate of eight gallons for each 200-gallon tank of spray, covering the entire surface of the tree, leaf buds and expanding fruit buds thoroughly.

3. Calyx spray, for scab, mildew and codling moth control. Use the following combination: Lime-sulphur solution, 4 gallons; atomic sulphur, 12 pounds; arsenate lead paste, 8 pounds;

water to make 200 gallons. In mixing this combination, put the lime and sulphur solution into the tank first and then with the agitator running, fill the tank about one-half full of water, then put in twelve pounds of atomic sulphur which has been previously diluted in two or three times its volume of water and when the tank is nearly filled, add the arsenate of lead paste the last thing before spraying. It is important that the atomic sulphur be added at this time in all orchards infected with mildew or where mildew is likely to cause any trouble. (All fruit growers who expect to use atomic sulphur at any time during the season should begin at time of calyx spray and combine it with arsenate of lead and lime-sulphur solution in order to start stimulation at this time and prevent over stimulation and sulphur injury later in the season.)

4. Ten-day spray. About ten days after the petals fall an additional application for scab control should be applied. Weather conditions will govern, to some extent, the material to be used. If cool, rainy weather prevails at this time, use lime-sulphur solution diluted at the rate of four gallons for each 200-gallon tank of spray. If the weather is reasonably clear and warm, use atomic sulphur at the rate of twenty-four pounds for each 200-gallon tank of spray, as this material is less likely to injure the fruit and foliage than lime-sulphur solution under these conditions.

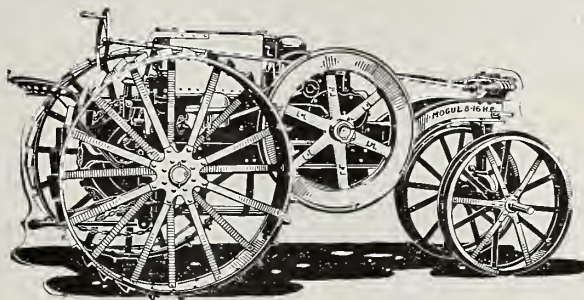
5. Thirty-day spray. Use the following combination: Atomic sulphur, 24 pounds; arsenate lead paste, 8 pounds; water to make 200 gallons. This is the second spray for codling moth control, the fourth spray for scab control and the final spray, under normal conditions, for mildew control. (If very hot weather prevails at this time, use twenty pounds of atomic sulphur instead of twenty-four pounds for each 200-gallon tank.)

5a. If cool rainy weather prevails between June 10 and 20 make an additional scab spray, using atomic sulphur ten pounds to 100 gallons of water.

6. Third codling-moth spray. This should usually be applied in early August. Use arsenate of lead paste at the rate of eight pounds for each 200-gallon tank of spray. Either atomic sulphur twenty pounds to 200 gallons of water for scab control, or Bordeaux mixture paste six and a half pounds to 100 gallons of water, or Bordeaux home made 4-4-50, may be combined with the arsenate of lead at this time as further protection against scab and anthracnose development. Properly balanced Bordeaux mixture is safe to use on most varieties of apples at this time, and in all orchards where anthracnose is likely to appear, Bordeaux mixture should be used at this time in addition to the early fall application recommended for the control of this disease. Too much emphasis cannot be put on the necessity for thoroughness and the proper timing of this work in every detail. Fruit growers know by this time what to expect by attempting economy in omitting one or more of these sprays

A Plain Statement of Fact

Mogul 8-16: \$725 Cash f. o. b. Chicago



AT the present prices of gasoline and kerosene, no farmer can afford to use a gasoline tractor. Gasoline averages now over 100 per cent higher in price than kerosene and is likely to go higher rather than lower, in the opinions of men who know the oil business.

Again, it is neither safe nor economical to use kerosene in a tractor not specially designed to operate on kerosene. Merely changing the fuel mixer is not enough; the design of the whole motor must be changed.

Kerosene and gasoline tractors of equal power sell for about the same price and use practically the same amounts of fuel. On that basis a Mogul 8-16 tractor saves each year, in fuel bills alone, about a third of its price. The figures prove the truth of this statement.

If you are considering the purchase of a tractor this year, give these facts careful study, from every point of view, before you spend your money.

Mogul and Titan tractors are designed specially to operate on kerosene and to give their users the full benefit of this advantage. There are four sizes—Mogul 8-16 and 12-25, Titan 15-30 and 30-60. Write us for full information before you buy any tractor.

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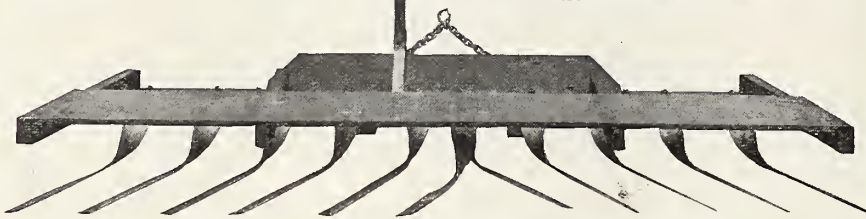
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depends largely on the way he cares for his orchard. Unless it is well cultivated he can not hope for good results.

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or by delaying the application of same. While the sprayings recommended above will cost something, the amount is insignificant compared with the difference in the price of scabby and of clean fruit. Furthermore, it must be realized that every year will make it more difficult to sell infected fruit at any price. In fact, this will be very largely prohibited the coming year. Another point which cannot be too strongly emphasized is that scab grows and develops much faster during cold damp or wet seasons than it does in hot dry weather. Furthermore, if rainfall is more or less general during the spring months, April and May, the spraying must be even more carefully done and repeated more frequently. All spraying followed by rain within twenty-four hours, should be repeated just as soon as possible. Furthermore, the spray cannot be expected to adhere or stick and give its greatest efficiency if put on wet trees.—S. W. Foster, Entomologist and Manager Insecticide Department, General Chemical Co., San Francisco Office.

The Outlook for the Apricot

The world's production of the apricot is limited. It is not grown extensively in the United States except in California. It is an early bloomer and cannot be successfully grown where spring frosts are common or severe.

It is particular as to soil, a rich sandy loam well drained being best suited to its needs.

Both trees and fruits are very subject to a disease commonly known as shot-hole fungus, for which an entirely successful remedy has yet to be found.

The apricot is fairly popular eaten fresh, is very good canned, and makes one of our best dried products. It possesses anti-scorbutic properties of great and recognized value. The dried apricot is a popular, cheap, nutritious, palatable and valuable food.

Owing to climatic and soil limitations it is not possible that apricot growing will be as greatly overdone as is the case with the peach. The short ripening season, coupled with difficulty of securing large supplies of labor for a few days at reasonable cost, will prevent large plantings anywhere; ravages of shot-hole fungus are likely to damage the crops of all except the most careful and intelligent growers—hence the danger of heavy overproduction is reduced to a minimum.

Clean, well-dried apricots, packed in small and sanitary containers can now be sold at a reasonable price, delivered by express at the doors of consumers all over the United States.

Judicious expenditure of a reasonable sum of money for advertising in the best home journals and magazines should and will create a demand that would take our entire product and then call for more.

Who is going to do it? The dealer or the grower? One or the other must. When this is done the apricot will need no one to foretell its future. It will speak for itself.—F. B. McKeon.

Why Prince Albert hands smokers such delight!

—*why*, Prince Albert hits the universal taste;

—*why*, it is today smoked in pipes and cigarettes throughout the civilized world;

—*why*, it can't bite your tongue;

—*why*, it can't parch your throat—

All that is answered by the little *message-to-you* on the reverse side of every Prince Albert topky red bag, tidy red tin and humidor, which reads—

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meets the best wishes of your pipe or cigarette makin's appetite as though it was made for *your* tongue and taste! Makes you forget you ever had tobacco troubles, it's so cheerful and chummy; and so cool and refreshingly good and satisfying!

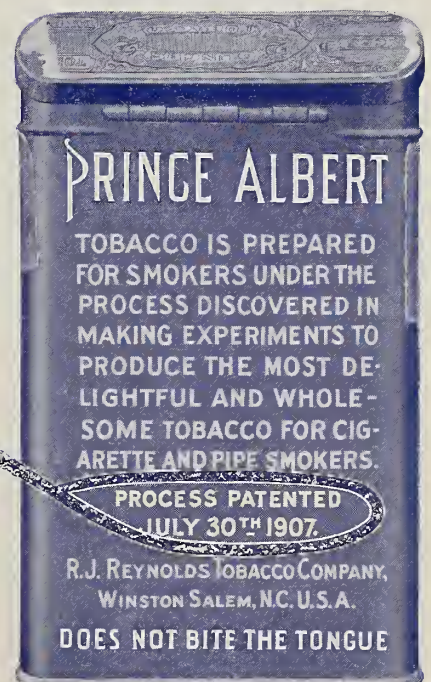
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The top of the supply can is 24 inches above the floor. You can fill it easily without hard lifting. The entire machine is so simply and sturdily constructed that it will do perfect work for years.

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